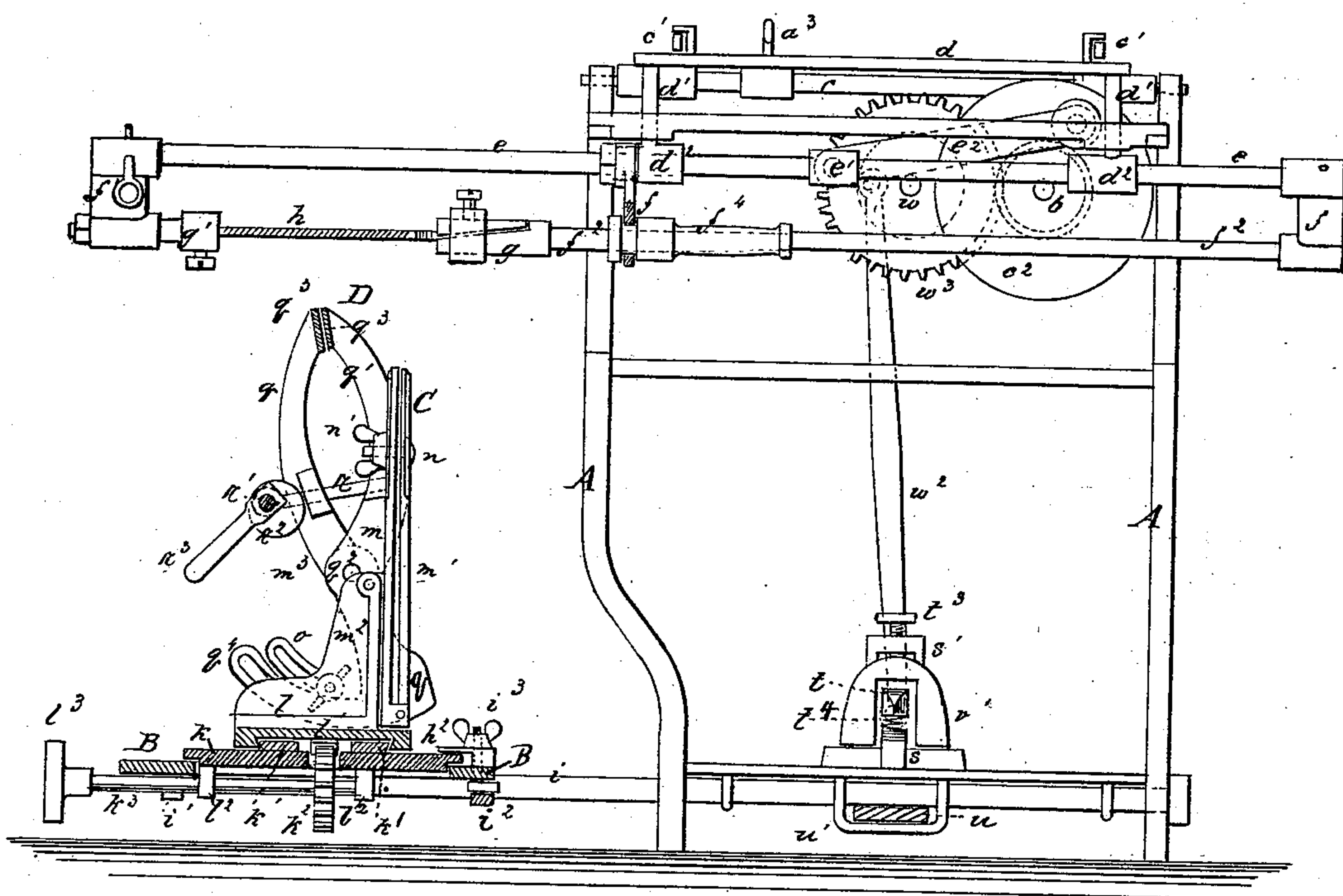
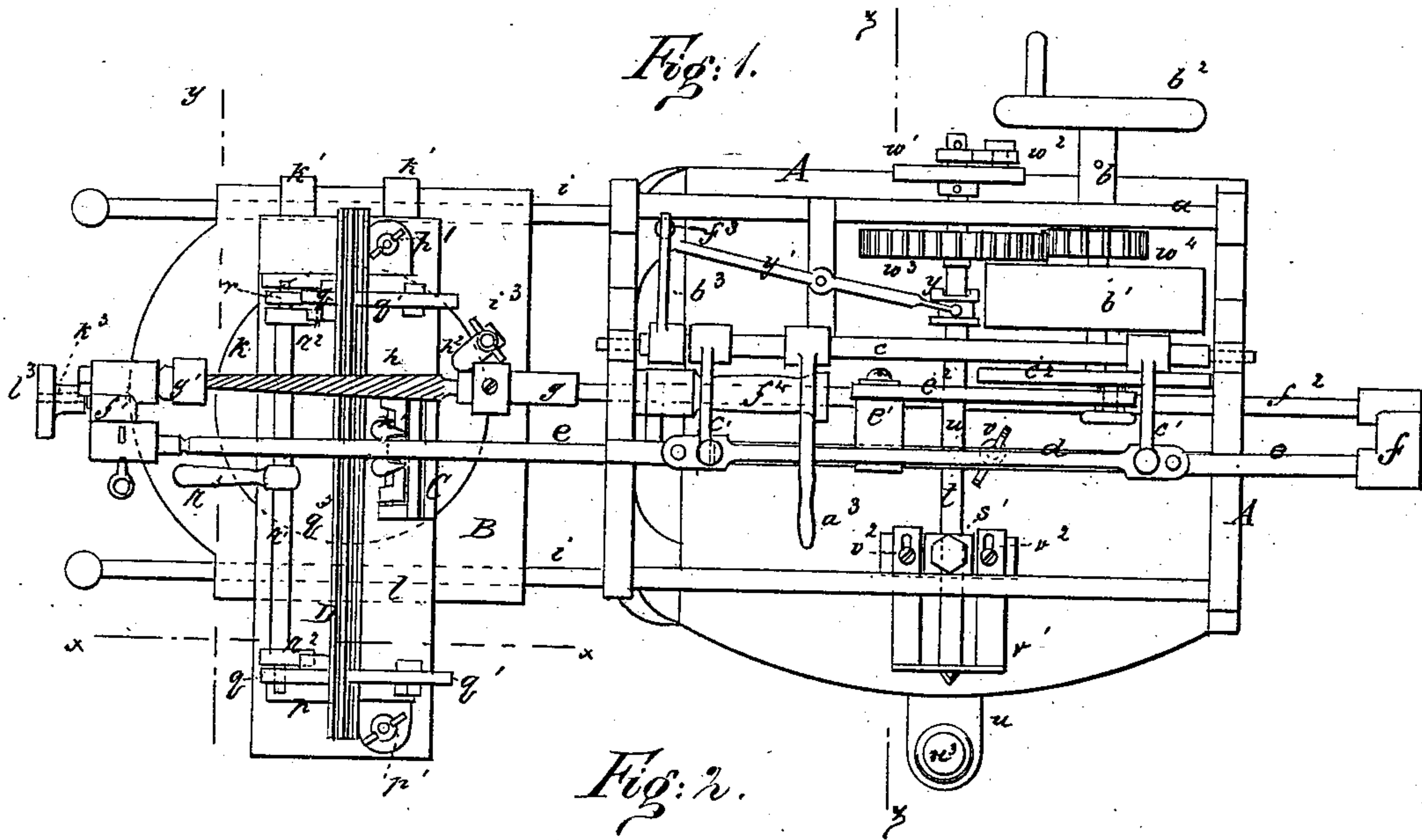


C. S. STEVENS.
Machine for Filing Saws.

No. 226,366.

Patented April 6, 1880.



WITNESSES:

Chas. Nida.
C. Sedgwick

INVENTOR:

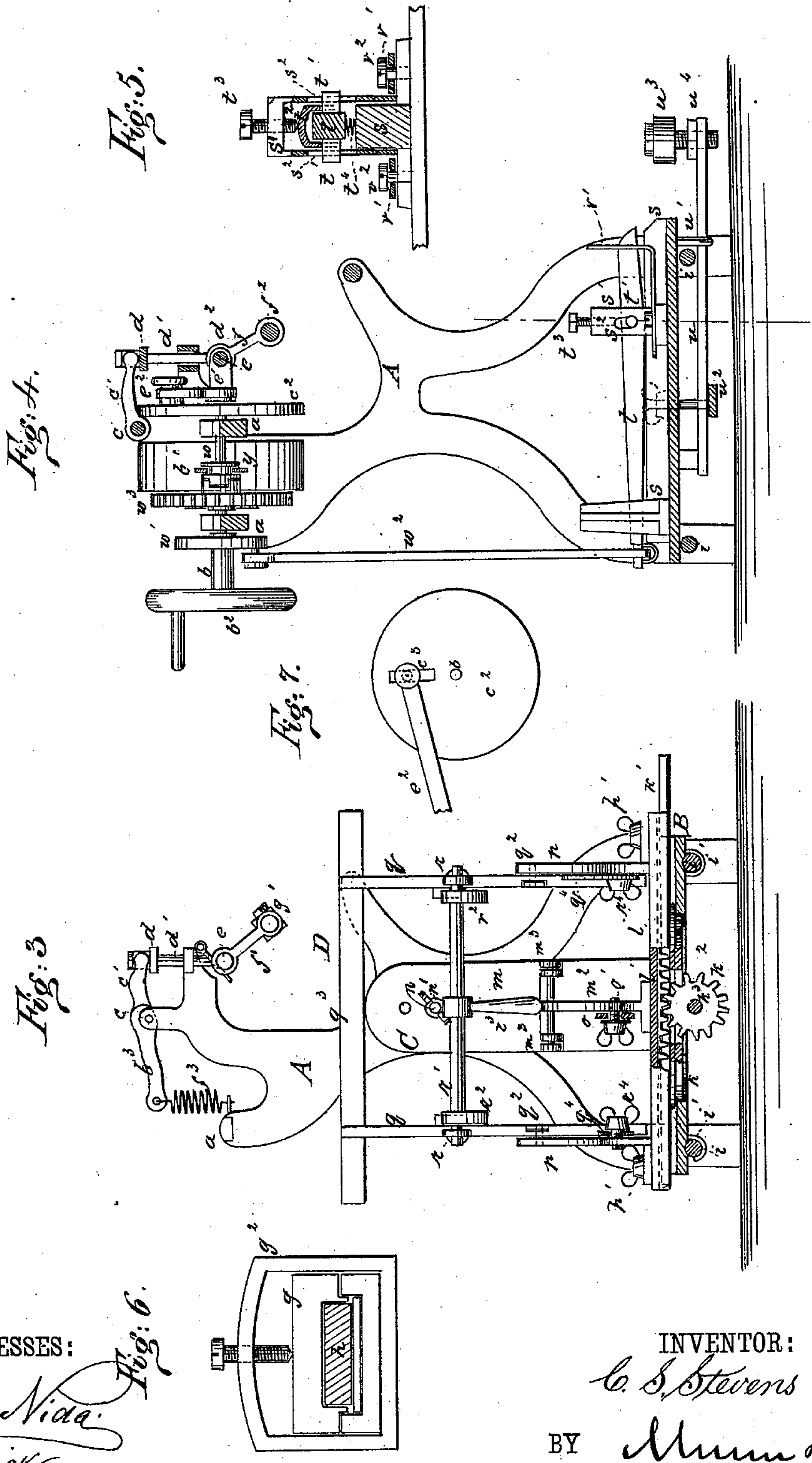
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UNITED STATES PATENT OFFICE.

CYRUS S. STEVENS, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO HIMSELF
AND GEORGE S. GILMAN, OF SAME PLACE.

MACHINE FOR FILING SAWS.

SPECIFICATION forming part of Letters Patent No. 226,366, dated April 6, 1880.

Application filed September 13, 1879.

To all whom it may concern :

Be it known that I, CYRUS S. STEVENS, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and Improved Saw-Filing Machine, of which the following is a specification.

My improvements relate to machines for filing straight and circular saws; and the invention consists in certain features of construction and combination for obtaining the necessary movements of the files and the requisite adjustments of the saws.

The combination and operation of the machine will be particularly described with reference to the accompanying drawings, and the invention pointed out in the claims.

In the drawings, Figure 1 is a plan view of the machine. Fig. 2 is a vertical longitudinal section on line $x x$ of Fig. 1. Fig. 3 is a vertical transverse section on line $y y$ of Fig. 1. Fig. 4 is a vertical transverse section on line $z z$ of Fig. 1. Fig. 5 is a cross-section of the setting-clamp in large size. Fig. 6 is a sectional view, in larger size, of one file-holding clamp.

Similar letters of reference indicate corresponding parts.

The file-driving mechanism is carried by a suitable frame, A, on the top rails, a , of which is the driving-shaft b , that is fitted in suitable bearings, and carries the driving-pulley b' for a belt. The shaft b may also carry a hand-wheel, b^2 , so that it may be operated by hand, or it may be driven by foot-power.

Above the rails a a rock-shaft, c , is fitted lengthwise of frame A, from which shaft c arms c' extend to and are connected with the top bar or rod, d , of a vertically-sliding frame that carries the reciprocating file. This frame consists of the rod d , end rods or slides, d' , fitted to slide in frame A, and bearings d^2 , that are attached to the lower ends of rods d' .

The bearings d^2 carry the horizontal slide-rod e , having a pin, e' , from which a pitman, e^2 , passes to a crank on wheel e^3 on shaft b , so that rod e is reciprocated from the shaft b . The pitman e^2 is connected by a crank-pin, which is adjustable in a radial slot, c^3 , of wheel

c^2 , (see Fig. 7,) whereby the throw of rod e may be varied at will.

One of the arms $f f$ moves with the rod e , while the other is sleeved upon a portion of the forward bearing, d^2 , and has attached to it a sleeve, f^4 .

In the outer ends of arms f a rod, f^2 , is journaled so as to be free to rotate therein; and to one end of rod f^2 is connected a clamp, g , that holds one end of file h , the other end being held by a similar clamp, g' , that is connected with and rotates freely in arm f' .

The clamps $g g'$ are substantially similar in construction, and, as shown in Fig. 6, consist of a split block fitted with a shackle, g^2 , and clamping-screw, whereby the end of file h is clamped in the block.

By the above-described construction the file is reciprocated by the rotation of shaft b . It is capable of movement, with rod f^2 , on rod e as an axis, and of axial movement, with rod f^2 , in the arms $f f'$, whereby the file may be brought to the necessary position for acting upon the teeth of the saw, that is held as hereinafter described.

The file h is raised with the rod e by means of a spring, f^3 , (see Fig. 3,) that is connected to an arm, b^3 , projecting from shaft c , and will be pressed downward by means of a handle, a^3 , on shaft c by hand or by a treadle. (Not shown.) The rod f^2 serves as a handle, by which the operator positions the file at the same time it is pressed down.

The clamps for holding the saws are fitted at the end of frame A beneath the file h . B is a bed-plate resting upon rigid rods i , that project from the bottom of frame A. The rods i pass through eyes or lugs i' , beneath plate B, so that said plate may slide upon rods i in the direction of reciprocation of the file, and rods i also pass between the plate B and a cross-bar, i^2 , that is attached to B by a screw and nut, i^3 , so that the bed-plate B may be clamped to rods i when adjusted.

In the plate B is a circular aperture, in which fits a circular plate, k , having flanges resting on B. Upon plate k , in a direction transversely of the machine, are fixed slide

ways or rods k' , having beveled edges, and upon the ways k' , held by a dovetail slot engaging with k' , so as to slide on plate k , is a carriage, l . Upon the under side of carriage l a rack, l' , is formed, which is engaged by a pinion, k^2 , that is on the shaft k^3 . The shaft k^3 is sustained in bearings l^2 at the under side of plate k , with one end projecting beyond bed-plate B, and fitted with a hand-wheel, l^3 , for turning it and moving carriage l on its ways k' . The shaft k^3 serves, also, to prevent plate k from rising at one side, while at the opposite side an arm, h^2 , that is upon the screw of nut i^3 , rests upon k to hold it down at that side and also clamp it to the bed-plate when nut i^3 is screwed down tightly. The nut i^3 thus serves to clamp bed B to the rods i and plate k to the bed B at the same time. The parts constructed as described permit of longitudinal, transverse, and rotary adjustments being given to the carriage l , upon which the saw-clamps are mounted.

I have shown the clamp C for a circular saw and clamp D for a straight saw, both upon the carriage l ; but only one of these clamps is required at once, and the clamp D is fitted for being removed when necessary.

The circular-saw clamp C consists of two plates, m m' , hinged together at one end, and hung, hinged end downward, upon a standard, m^2 , of the carriage l by a cross-pin which passes through the top of standard m^2 and through the lugs m^3 , that project from plate m about midway of its length, whereby the clamp C may stand vertically or be more or less inclined.

In the upper ends of plates m m' there are two or more apertures for receiving a screw-stud, n , which has upon it a nut, n' , the stud n serving to carry the saw and nut n' to force the plates together to clamp it, and the desired aperture may be used according to the diameter of the saw.

From the lower end of clamp C a slotted and curved arm, o , projects backward, and a clamping-screw, o' , passes through its slot into standard m^2 , so that the clamp C may be retained in any position to which it may be swung on the standard.

The clamp D for straight saws is supported on standards p p , that are attached to carriage l by clamping-screws p' p' , so that the standards p p , with the clamp, may be removed. The clamp consists of arms q q' , jointed together and to each standard p by a pivot-pin, q^2 , so that they may swing upon each other and upon the said pins q^2 of standards p , and having attached to their upper ends bars q^3 q^3 , that extend from one arm, q or q' , to the other, for receiving the saw. Each arm q' is fitted with a pin, r , that projects through an aperture in the opposite arm, q . The outer ends of these pins r are formed with eyes, in which is a shaft, r' , that carries the cams r^2 r^2 , which, when shaft r' is turned by means of its handle

r^3 , come in contact with lugs on arms q , thereby drawing the bars q^3 together and clamping the saw that is placed between them. At the lower ends of arms q there are slotted and curved arms q^4 , fitted with clamping-screws r^4 , that enter standards p , whereby the clamp D may be retained in a more or less inclined position.

By this construction the saw-clamp may be adjusted to give the upward and sidewise bevel to the teeth in filing, and the saw fed forward, tooth by tooth, by means of the shaft k^3 , acting by pinion k^2 and rack l' .

The saw-setting devices are arranged in the lower part of the frame, and are operated by connections from shaft b .

s represents an anvil, and s' a yoke at one end of it. t is a lever hung by pivots t' in the yoke and above the anvil, the pivots t' passing through slots s^2 . t^2 is a V-plate over lever t , and with its ends resting on pivots t' , and t^3 is a screw in the top of the yoke and bearing upon plate t^2 . t^4 is a spiral spring between the anvil and lever.

Beneath the anvil is an arm, u , in supports u' u^2 , which arm is arranged to slide lengthwise of lever t and in front of the anvil, and upon the end of the arm is a vertical screw, u^3 , to enter the eye of a circular saw.

u^4 is a set-nut for clamping the screw, and v is a nut on a threaded stem projecting from support u^2 to clamp the arm. v' is a gage attached to the base of the anvil by screws v^2 , passing through slots in the end of the gage. Upon the rails a of frame A, contiguous to shaft b , is a cross-shaft, w' , connected by rod w^2 with the back end of lever t . The shaft w carries a loose gear-wheel, w^3 , meshing with a wheel, w^4 , fast on shaft b . y is a clutch on shaft w , movable by a lever, y' , for connecting wheel w^3 with shaft w , and thereby operating lever t .

The saw, after being set, will be placed in the clamp adapted for it, where it will be rigidly held while the file is manipulated by the operator, as before indicated.

I do not limit myself to the details of construction exactly as described and shown.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, substantially as shown and described, of the shaft c , arms c' , bar d , slides d' , having bearings d^2 , horizontal slide-rod e , provided with pin e' , pitman e^2 , crank-pin e^3 , wheel e^2 , arms f f' , and file-clamps g g' , as shown and described.

2. The combination of the plate B, having lugs i' , rods i , circular flanged plate k , provided with ways k' , cross-bar i^2 , screw and nut i^3 , arm h^2 , carriage l , having rack l' on its under side, shaft k^3 , pinion k^2 , standards p p , saw-clamp D, hinged to said standards, slotted and curved arms q^4 , and screws r^4 , substantially as shown and described.

3. The combination of the plate B, having lugs i' , rods i , cross-bar i^2 , screw and nut i^3 , and arm h^2 , as and for the purpose set forth.

5 4. The combination, substantially as described and shown, of the rock-shaft c , arm b^3 , spring f^3 , handle a^3 , arms c' , bar d , slides d' , having bearings d^2 , slide-rod e , arms $f f f'$, rod

f^2 , sleeve f^4 , and file-clamps $g g'$, as and for the purpose specified.

CYRUS S. STEVENS.

Witnesses:

ROBT. B. CAVERLY,
GEORGE S. GILMAN,
DANIEL MURPHY, Jr.